
ACHIEVEMENT GOAL ORIENTATIONS, “OUGHTS,” AND SELF-REGULATION IN STUDENTS WITH AND WITHOUT LEARNING DISABILITIES

Georgios D. Sideridis

Abstract. The purpose of the present study was to evaluate the regulation of goal orientations and strong “oughts” in students with learning disabilities (LD). Participants were 132 Greek students with state-identified LD using the achievement-discrepancy criterion, and 538 typical students. The first hypothesis tested was that feeling obliged to engage in an activity is grounded on fear and is associated with a network of avoidance-related behaviors. Results confirmed this hypothesis, as the ought-self explained significant amounts of variability in task avoidance, performance avoidance, and fear of failure. The second hypothesis was that the ought-self was associated with failure to regulate. Student groups were formed based on their adoption of mastery, performance approach, task avoidance, multiple-approach goals, and strong “oughts.” Results indicated that students with strong “oughts” persisted significantly less than students with approach forms of motivation. Regardless of their lack of persistence, however, students with strong “oughts” were not inferior in achievement, nor did they display heightened negative affect. By modeling the relationship between goals, achievement and psychopathology, results showed that the ought-self was negatively associated with achievement and positively associated with indices of anxiety and depression. Mean group analyses pointed to salient differences between students with and without LD on motivation, achievement and psychopathology.

GEORGIOS D. SIDERIDIS, Department of Psychology, University of Crete.

Recent literature on learning disabilities suggests that the disorder may entail a lot more than academic deficits (Vaughn & Fuchs, 2003). For example, many students with learning disabilities (LD) present other comorbid characteristics such as depression (Heath & Ross, 2000); anxiety (Hoy, Gregg, Wisenbaker, Manglitz, King, & Moreland, 1997); emotional prob-

lems (Masi, Provedani, & Poli, 1998); and motivational deficits (Dunn & Shapiro, 1999). Given such comorbidity and heterogeneity (Kavale & Forness, 1987), it is imperative for researchers to expand their frameworks to understand the causes of underachievement in students with LD and, potentially, intervene accordingly.

A particularly underrepresented area of research concerns the hypothesized functional role of motivation and emotions (e.g., Bryan, Burstein, & Ergul, 2004; Elias, 2004; Elksnin & Elksnin, 2004; Turner, Meyer, & Schweinle, 2003), which has proven to be highly predictive for the achievement of students with LD (Bouffard, 2003; Garcia & de Caso, 2004; Sideridis & Tsorbatzoudis, 2003). Attention to motivationally related constructs for identification of LD has also been found to enhance correct identification of LD subtypes (Sideridis, Morgan, Botsas, Padeliadu, & Fuchs, in press).

The primary objective of the present study was to evaluate students' regulation of their academic behavior when that behavior had various motivational origins (i.e., achievement goal theory and obligations, as described in self-determination theory).

Achievement Goal Theory

According to goal theory, approaching a task out of interest and the desire to learn may yield more effective outcomes than approaching it to demonstrate competence over others (Ames, 1992). The former orientation (termed *learning* or *mastery*) has consistently been associated with positive achievement gains as students focus on understanding and performing a task out of joy and pleasure (Meece & Holt, 1993; Nicholls, Patashnick, & Nolen, 1985).

The adaptiveness of the latter orientation, termed *performance* orientation (Dweck & Leggett, 1988), has been subject to controversy. With a basis in normative comparisons, this orientation describes students who focus on outperforming other students and maintaining a high standing in their class. Originally, Dweck (1986) termed this orientation "helpless" because students tended to withdraw from academic tasks early, particularly when they felt incapable of performing well. Dweck attributed students' early withdrawal to their conceptions of ability, which she termed "fixed" and "malleable." That is, students who thought that their intelligence was fixed (i.e., could not change in their life course) displayed the "helpless" pattern, and were more likely to approach tasks for competence-based reasons. On the contrary, students who thought that intelligence was malleable were more likely to persist and adopt mastery or learning-based goals.

Those early findings have been replicated consistently in subsequent studies (e.g., Dykman, 1998), up until the dichotomization of performance goals into approach and avoidance (i.e., a focus to do well or a focus not to fail) (Elliot & Harackiewicz, 1996). Following the dichotomization of performance goals, emphasis and focus changed; students could be motivated by targeting a positive end state (approach form of motivation; e.g., get high grades) or could be motivated by the goal to

avoid negative evaluations (avoidance focus; e.g., avoid ridicule and humiliation from receiving low grades). Although some controversy surrounded this dichotomization, it is fairly well established that performance approach and performance avoidance goals are associated with unique patterns of behavior, affect, and achievement (e.g., Midgley, Kaplan, & Middleton, 2001), thus presenting different forms of regulation.

Recent evidence also indicates that performance-approach goals are adaptive for certain outcomes and under certain circumstances (Harackiewicz, Barron, Pintrich, Elliott, & Trash, 2002; Kaplan & Middleton, 2002; Midgley et al. 2001). Thus, mastery and performance orientations are thought to energize different regulatory mechanisms. They activate different cognitions and strategies and, eventually, result in different academic outcomes when pursued independently of each other. However, the orthogonality of goal orientations has recently been challenged with the proposition that a synergy of goals may prove to be more adaptive than the pursuit of one type of goal alone (e.g., Pintrich, 2000).

Multiple goals and optimal motivation. Pintrich (2000) and Barron and Harackiewicz (2001) suggested that goal orientations do not necessarily operate independently. Individuals can be motivated by multiple forces, which may operate in different ways, producing different forms of regulation and explaining different outcomes. Barron and Harackiewicz (2001) proposed four motivational combinations that may result in diverse achievement outcomes (see also Pintrich, Conley, & Kempler, 2003): the additive goal pattern, the selective goal pattern, the interactive goal pattern, and the specialized pattern.

According to the *additive goal* pattern, goal orientations are orthogonal and are associated with different achievement outcomes in an additive fashion. Thus, it may be more adaptive to have two forces operating than just one. Students who adopt multiple-approach goals, given this pattern, are expected to have a notable advantage over students who select only one set of goals. For example, a student may wish to be the top student in his or her class in math, a subject that happens to be of great personal interest.

The *selective goal* pattern states that individuals may pursue different goals in different situations. Thus, a student may pursue performance goals in large lecture courses in which normative evaluations are prominent, but may pursue mastery goals in small seminars in which the emphasis is on mastery (Barron & Harackiewicz, 2003).

According to the *interactive goal* pattern, goals interact with each other to produce outcomes (e.g., an individual who likes the material of a course but also

desires to be the top student in the class). The pursuit of these goals is expected to result in unique gains over and above those produced from the pursuit of mastery or performance goals alone. However, this approach “weights” goals equally. Thus, a high-mastery/low-performance pattern is treated as identical to a low-mastery/high-performance pattern.

Lastly, the *specialized goal* pattern states that each orientation is expected to relate to specific processes or outcomes only. Thus, mastery goals may predict positively well-being whereas performance goals may predict positively anxiety.

Given research findings that reflect a synergistic role of pursuing both mastery and performance goals in typical student groups, it is important to evaluate those propositions with students with LD. Studies employing students with LD, attention deficit hyperactivity disorders (ADHD), or “garden variety” student samples, suggested that those students have motivational deficits (e.g., Carlson, Booth, Shin, & Canu, 2002; Sideridis, 2003a, 2005a). Past studies have also presented a mixed profile for students with LD with regard to their adoption of different goals. For example, Pintrich, Anderman, and Klobucar (1994) reported that students with LD were high on mastery, whereas Carlson et al. (2002) reported the opposite. In general, the literature seems to suggest that students with LD obtain low scores on mastery orientation (e.g., Botsas & Padelidiadu, 2003). Little is known about the type of relationship that links goal orientations to achievement outcomes for students with LD.

In a recent study, Sideridis (2005b) reported that students with LD benefited when either orientation was operative, with the effects from pursuing performance-approach goals being significantly more pronounced. Specifically, a performance-approach orientation had significant positive standardized weights associated with both academic achievement and cognition. One unit of change in students’ performance-approach orientation was associated with about .25 to .65 unit changes in math achievement (or their intention to do well in math). The respective effects from pursuing mastery goals were significant, approximately .30 in standardized units.

It is possible that pursuing goals out of interest or the desire to outperform other students are only two ways of thinking about and approaching a task. Another reason for pursuing goals may lie in an individual’s feelings of obligation, either because the person feels he has to accomplish something undesirable or because he wants to satisfy the wills of another person (e.g., parents, teacher, friends) (Deci & Ryan, 2000; Higgins, 1987). Motivation out of obligation has been described in various motivational theories.

Ought-Self: Theoretical Links

The ought-self as a concept is linked to at least four theoretical schemes (self-discrepancy, self-determination, possible selves and planned behavior). For the purposes of the present study, the conceptualization of the ought-self relates strongly to the concept of controlled motives in self-determination theory (SDT; Ryan & Deci, 2000).

In SDT, the ought-self represents a *self*-motivational system that is regulated by other people’s administration of contingencies. Thus, it is an external form of motivation that is more likely linked to regulation failure and decrements in intrinsic motivation. According to SDT, externally based goals cannot be internalized and valued as important by the self because they have an external origin. Externally based goals can be rooted in people who are significant in the person’s environment (e.g., parents, teachers, friends). Thus, the value and importance of significant others can be transmitted to the person, and these external goals get assigned a “relative” value and importance (based on how important these goals are for the “significant others”). For example, a student may not like math but his parents may constantly remind him that it is important for them that he does well in math because they have a family business for which math is necessary. In this case, the goal of achieving well in math is not personally important, interesting, or valuable, but is important and valuable through the lenses of the student’s parents. Thus, it is assigned some importance and value, which energizes the student to engage in goal-directed behaviors.

In SDT, goal attainment is more likely when the value/importance of the goal is internalized by the person, which is not the case when the ought-self is operative. Deci and Ryan (2000) proposed that across a continuum between amotivated and fully self-determined behaviors, the behaviors guided by ought-self represent an “immature” form of motivation. This form of motivation is most likely associated with regulation failure, low achievement, and heightened anxiety. Thus, those “external pressures, controls and evaluations appear to forestall rather than facilitate “... the constructive process of giving personal meaning and valence to acquired regulations” (Deci & Ryan, 2000, p. 238).

The originators of SDT further discussed the operationalization of the ought-self. In their view, the ought-self may motivate a person, but the external origin of the contingencies cannot result in self-determined actions (i.e., actions valued by the self). These external motivators (termed “should-oriented inductions”) are associated with an inability to assimilate those values as coming from the self. Self-produced

inductions come from an individual's formation of a cognitive schema that is integrated into one's values. Such a self-schema results in *authentic* engagement and volitional involvement with an activity, leading to fully self-determined behaviors (i.e., intrinsically motivated).

The regulation of goals that are controlled by others is saliently different from intrinsically motivated goals. Through various processes (e.g., internalization, integration), the self may try to take in those goals and attempt to pursue them, but they will never be the basis for self-determined action, and it is likely that they will not be attained. An individual who is externally motivated (e.g., through rewards) may eventually lose intrinsic interest (Grolnick & Ryan, 1987). However, individuals who feel obliged to engage may attempt to internalize external values. Goal attainment should then depend on the success of this internalization.

According to Ryan and Deci (2000), regardless of goal attainment, controlled motivation (when external forces are operative) is considered an unhealthy form of motivation, associated with loss of self-esteem, poor well-being and adjustment problems. Thus, self-determination theory places strong "oughts" as a motivational entity that affects subsequent goal pursuit and influences the regulation of the behaviors involved in that pursuit. Similar roles for obligations ("oughts") have been described in other theories (cf. Ajzen, 1988; Higgins, 1987; Markus & Nurius, 1986; Wentzel, 1989).

One objective of the present study was to empirically

evaluate the regulation of student behaviors when their motivation originated in goal orientations or "oughts." For comparison purposes samples of students with and without LD participated.

Specifically, the present study attempted to test the following hypotheses:

1. Being obliged to engage in an academic activity is positively associated with a network of avoidance-related behaviors for students with LD.
2. Motivation by mastery goals, performance-approach goals, multiple goals, obligations, or lacking motivation is associated with different on-task outcomes, achievement, and emotions for students with LD.
3. The ought-self is negatively associated with academic achievement and positively associated with post-achievement anxiety and depression. The respective results of approach goal orientations are expected to be in the opposite direction. There is no prediction (based on theory) as to whether these processes would operate differently for students with and without LD.
4. There are significant differences in obligations, motivation and psychopathology for students with and without LD. Students with LD may feel more obliged to engage in school-related activities, and will most likely be inferior in motivation and have higher levels on anxiety and depression, compared to their peers.

Table 1
Sample Characteristics for Students With and Without LD

	Students With LD		Typical Students	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
IQ	105.38	5.38	113.56	8.52
Achievement ¹	6.91	1.50	9.00	1.11
Age	11.38	1.56	11.58	1.60

Note. ¹Achievement assessment data are confidential to the special diagnostic teams that collect them. Semester grades are reported here to partially reflect achievement.

METHOD

Participants and Procedures

Participants were 132 fifth- and sixth-grade students diagnosed as having LD using state diagnostic criteria in northern Greece. Subjects were 73 boys and 59 girls who were educated in typical classroom settings. The state diagnostic criteria in Greece follow the discrepancy formula (i.e., between IQ and achievement) and employ measures that are identical or similar to those used in the United States (e.g., WISC-III) (see Table 1). These students were receiving supplementary services following regular school hours. Such services, called "teaching for empowerment," are mandated by federal legislation in Greece. Usually students practice material previously taught using worksheets, in the presence of a teacher. The teaching-for-empowerment teacher works with each student on an individual basis or forms teams.

Additionally, 583 typical students comprised a comparison sample for Hypothesis 3 (the simultaneous modeling of all hypotheses using latent variable analysis). A total of 297 boys and 284 girls (gender was missing for two), fifth and sixth graders were selected from a pool of 1,200 students in the same 28 classes as the students with LD. Classrooms were located in urban, rural and suburban areas in a large state in northern Greece. Students came from various socio-economic strata, most of them from middle-class families, which is the typical distribution of students in Greek public schools.

Prior to being engaged in a math activity, students completed scales of positive and negative affect and of goal orientations and the ought-self. Then they were instructed to work on a series of math exercises modeled after the curriculum for a minimum of 5 minutes. Students were then told that they could stop the activity or continue as long as they wished. When students wanted to stop, they were to raise their hand. Trained research assistants monitored the total time each student engaged in the math activity. When they stopped, students had to leave the room after completing self-report measures of positive and negative affect, anxiety, and depression. No student left the room at 5 minutes. Most students persisted significantly longer and few remained until the end of class time, which was approximately 25 minutes.

Measures

On-task behavior. This variable comprised the time students spent engaged with the math exercises.

Mathematics achievement. Three indicators comprised the latent variable, math achievement. The first was semester grades. The second was a teacher-composed rating scale (CBM), which assessed student knowledge about 12 math concepts (on a scale from 0-10). The scale was constructed based on the curricu-

lum for each grade using an item pool developed by 30 elementary school teachers from northern Greece. The third indicator of math achievement was the mathematics task in which students had to solve 15 grade-appropriate exercises modeled after the curriculum. The number of math exercises solved correctly comprised this dependent variable. Between-construct correlations were as follows: $r_{\text{CBM/Semester Grades}} = .93$, $r_{\text{CBM/Math Exercises}} = .39$, $r_{\text{Math Exercises/Semester Grades}} = .37$.

Goal orientation. Four constructs of goal orientation were assessed: mastery, performance approach, task avoidance, and a multiple-goal orientation, which was the multiplicative term of mastery and performance-approach goals. Mastery orientation was assessed using eight items derived from well-known scales (Elliot & Church, 1997; Lethwaite & Piparo, 1993; Midgley et al., 2000). Performance-approach goals were assessed with 10 items from the same scales as those used for the mastery subscale. Task avoidance was assessed with six items, three were from Thorkildsen and Nichols (1998) and three from Lethwaite and Piparo (1993). Sample items included (a) for mastery, "How important is it to you to understand mathematics?"; (b) for performance-approach, "How important is it to you to outperform your classmates in mathematics?"; and (c) for task avoidance, "How important is it to you to spend little time in mathematics?" All goal orientations were assessed using a 7-point response option ranging from "not at all" to "very much so." The internal consistency of the items (Cronbach alpha) that comprised the mastery subscale was .95, the performance-approach subscale, .90, and the task-avoidance subscale, .88.

Emotionality. Students' affective response was assessed using the children's version of the PANAS (Laurent et al., 1999; Watson, Clark, & Tellegen, 1988). Two types of affect, positive and negative, were made up of 10 adjectives each, rated on a 5-point scale ranging from 1 (not very true) to 5 (true all the time). Alphas were .87 for positive affect and .88 for negative affect.

Depression. Feelings of depression were assessed using the Children's Depression Inventory (CDI; Kovacs, 1992). The CDI consists of 27 self-report items, each of them including three statements, scored from 0 to 2 (with the score of 2 indicating severity in that characteristic). The "suicide" item was dropped from the original version of the CDI, a practice followed in previous studies as well because of the negative connotations the item carries (e.g., Cole, Hoffman, Tram, & Maxwell, 2000).

According to Cole et al. (2000), the CDI measures three factors: (a) social self-esteem, (b) oppositional-misbehavior, and (c) dysphoria-sadness. Sample items included (a) for social self-esteem, "I do not have any

Table 2
Unidimensionality of the Ought-Self Scale

Item	Study 1		Study 2		Study 3		Study 4		Study 5	
	<i>r</i> ¹	<i>R</i> ²	<i>r</i>	<i>R</i> ²	<i>r</i>	<i>R</i> ²	<i>r</i>	<i>R</i> ²	<i>r</i>	<i>R</i> ²
1	.808	58%	.855	62%	.836	70%	.810	58%	.742	65%
2	.789		.901		.895		.784		.863	
3	.826		.805		.922		.868		.883	
4	.583		.550		.657		.524		.724	

¹Item loading based on Exploratory Factor Analysis (EFA). These results came from Sideridis (2003b).

friends" and "I look ugly"; (b) for oppositional-misbehavior, "I am bad all the time" and "I never do what I am told"; and (c) for dysphoria-sadness, "I am sad all the time" and "I have trouble sleeping every night." Several studies have reported on the reliability and validity properties of the scale (Cole et al., 2000; Kovacs, 1992). Internal consistency estimates ranged between .70 and .83.

Anxiety. Symptoms of anxiety were assessed using the Anxiety subscale of the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978). According to Cole et al. (2000), the 28 items of the RCMAS measure three dimensions: social alienation, worry-oversensitivity, and physiological concerns. The scaling of the instrument was modified based on Cole et al.'s (2000) suggestions. Thus, the "yes"- "no" response option was replaced with a 3-option scaling system. The addition of the option "this was sort of true" was placed between "yes" and "no." Using the new scaling, alphas ranged between .75 and .86. Factor-analytic studies also were supportive of the scale's validity (Cole et al., 2000; Paget & Reynolds, 1984). The Lie subscale of the RCMAS was not used in the present study because of time considerations.

Fear of failure. Clifford's (1988) five-item "failure tolerance" subscale was modified for use in mathematics and was applied in the present study (alpha was .75). A sample item was "Will you be disappointed if you make mistakes in mathematics?"

Ought-self. The ought-self scale was comprised of four items that tapped two types of obligations: self-imposed and other-imposed. The items were: "Do you

think that it is your obligation to do well in mathematics?," "Do you think that you should do well in mathematics in order to please your parents?," "Do you think it is your job to do well in mathematics," and "Do you think that you should do well in mathematics whether you like it or not?" The subscale was the subject of intense psychometric examination by means of exploratory factor analysis using five student samples and 818 participants (Sideridis, 2003b). Internal consistency estimates were acceptable across all samples, ranging between .73 and .84. Also, the unidimensionality of the scale was well supported with all five student samples (see Table 2). Using the LD sample, alpha was .81.

Data Analyses

Effect size (eta square). Besides analyzing the data using traditional statistical significance testing, all differences were also reported using effect size measures¹ (cf. Onwuegbuzie, Levin, & Leach, 2003; Sideridis, 1999).

Latent variable modeling. A latent variable model was applied to evaluate all hypothesized relationships. Nonsignificant chi-square statistics and fit indices above .90 were the criteria used to determine acceptable model fit (Hu & Bentler, 1995, 1998a, 1998b). All models were analyzed using variance-covariance matrices inputs in EQS 5.7b (Bentler, 1998).

RESULTS

Intercorrelations between variables shown in Table 3 indicate that "oughts," as a form of motivation, shared variance with goal orientations – both approach and avoidance.

Table 3

Intercorrelations Between Variables Across Student Groups

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Mastery	—																	
2. Perform-approach	.70**	—																
3. Perform-avoidance	.33**	.51**	—															
4. Ought 1	.28**	.38**	.41**	—														
5. Ought 2	.29**	.43**	.45**	.56**	—													
6. Ought 3	.32**	.45**	.43**	.52**	.72**	—												
7. Ought 4	.09	.18*	.30**	.34**	.44**	.55**	—											
8. Positive affect	.29**	.27**	.003	.13	.15	.17	.04	—										
9. Negative affect	-.04	-.04	.12	-.10	.04	.08	.01	-.32**	—									
10. Math-TRS	.21*	.13	-.05	.10	-.01	-.01	-.04	.19*	-.13	—								
11. Math-semester	.06	.01	-.19*	-.02	-.04	-.06	-.04	.17	-.15	.78**	—							
12. Math-exercises	.19*	.15	.02	.06	-.01	-.10	-.02	.16	-.11	.25**	.08	—						
13. Social alienation	-.05	-.12	.03	-.05	-.12	-.05	-.01	-.35**	.46**	-.11	-.15	-.05	—					
14. Worry	.10	.10	.26**	.05	.02	.01	-.07	-.24**	.47**	.02	-.07	-.02	.50**	—				
15. Physiological conc.	.05	.05	.26**	-.04	-.09	-.04	-.06	-.23**	.50**	-.03	-.15	-.07	.44**	.65**	—			
16. Social self-esteem	-.10	-.14	.03	.01	.02	.05	.06	-.20*	.22*	-.22*	-.07	-.02	.22*	.20*	.10	—		
17. Oppositional-misb.	-.03	-.04	.09	.04	.13	.07	.04	-.21*	.22*	-.22*	-.05	.02	.11	.18*	.04	.81**	—	
18. Dysphoria-sadness	.04	-.03	.15	.03	.10	.11	.06	-.20*	.32**	-.17	-.13	.08	.26**	.36**	.30**	.83**	.76**	—

Typical Students

1. Mastery	—																	
2. Perform-approach	.32**	—																
3. Perform-avoidance	.07	.29**	—															
4. Ought 1	.20**	.24**	.18**	—														
5. Ought 2	.27**	.25**	.21**	.63**	—													
6. Ought 3	.13	.20**	.24**	.55**	.56**	—												
7. Ought 4	-.06	.13*	.23**	.26**	.25**	.43**	—											
8. Positive affect	.34**	.19**	.13**	.15**	.21**	.11**	-.04	—										
9. Negative affect	-.19**	.04	.27**	.05	.01	.03	.15**	-.38**	—									
10. Math-TRS	.24*	-.04	-.25**	-.04	-.03	.01	-.17**	.07	-.14**	—								
11. Math-semester	.26**	-.01	-.26**	-.03	-.01	.01	-.17**	.11**	-.13**	.93**	—							
12. Math-exercises	.21**	.04	-.09*	.03	-.06	.01	-.13**	.16**	-.15**	.27**	.28**	—						
13. Social alienation	-.18**	.02	.22**	.03	-.04	.08*	.18**	-.23**	.31**	-.18**	-.11**	-.11**	—					
14. Worry	-.11**	.02	.38**	.07	.03	.10**	.14**	-.23**	.37**	-.12**	-.12**	-.06	.60**	—				
15. Physiological conc.	-.17**	-.04	.24**	.04	.01	.07	.14**	-.24**	.35**	-.12**	-.11**	-.07	.58**	.62**	—			
16. Social self-esteem	-.07*	.08*	.13**	.07*	.08*	.11**	.15**	-.06	.17*	-.23**	-.16**	.01	.44**	.31**	.31**	—		
17. Oppositional-misb.	-.04	.04	.09*	.05	.05	.08*	.10**	-.07	.13**	-.20**	-.15**	.04	.33**	.25**	.26**	.86**	—	
18. Dysphoria-sadness	-.03	.07*	.19**	.09*	.08*	.10**	.12**	-.06	.21**	-.16**	-.10**	.03	.43**	.43**	.39**	.89**	.84**	—

* $p < .05$, ** $p < .01$.

Ought-Self and Avoidance Motivation

According to prevailing hypotheses, the ought-self represents a form of motivation that is controlled by others. Thus, it is grounded on fear of rejection. That is, fear of letting people down by not complying with *their* goals and *their* valued outcomes. Therefore, it is hypothesized that “oughts” relate positively to various indices of avoidance motivation such as performance avoidance, task avoidance, and fear of failure. Regressing the ought-self on fear of failure resulted in 14.2% explanatory variance. One unit of change in “oughts” was associated with a .376 unit change in fear of failure (in standardized values). Thus, the ought-self was a strong predictor of fear of failure [$F(1, 128) = 21.132, p < .001$].

Similar results, although stronger, emerged with regard to performance avoidance. For one unit change in the ought-self, performance avoidance changed by .492 in standardized values. The amount of variability of performance-avoidance explained was 24.2% [$F(1, 127) = 40.246, p < .001$]. These two findings corroborate with the idea that the ought-self represents a form of motivation that is based in fear of failure and negative outcomes in general. With regard to task avoidance, results suggested that “oughts” explained significant amounts of the variability in avoidance motivation ($R^2 = 3\%$). One unit of change in obligations was associated with a medium change (i.e., .171) in amotivation [$F(1, 129) = 3.844, p = .052$]. Overall, the results suggest that the ought-self represents a form of motivation that is associated with the fear of negative outcomes.

Goal Orientations, “Oughts,” and Student Regulation of Academic Behaviors

The second hypothesis examined the proposition that the ought-self leads to self-regulation failure. Regulation failure is hypothesized to be manifested with early disengagement (when one is challenged), low achievement, and negative affect – both prior to and following the experimental manipulation (i.e., the introduction of challenging math exercises).

Results indicated that students motivated by strong “oughts” disengaged from the math activity significantly earlier than any other group (even the amotivated group) [$F(3, 67) = 3.023, p < .05$]. The most persistent group was students holding a multiple-goal orientation, followed by those having a mastery-approach² orientation. The effects of performance-approach goals could not be evaluated due to low frequencies in that category, which disabled group formation. With regard to math achievement, no significant group differences were found across the various orientations and the ought-self group [$F(3, 128) = 0.497, p = \text{n.s.}$]. Thus, students motivated by strong “oughts” performed no differently in math than the other stu-

dent groups. This finding may be due to the “baseline” effect as performance in math was low for all students with LD.

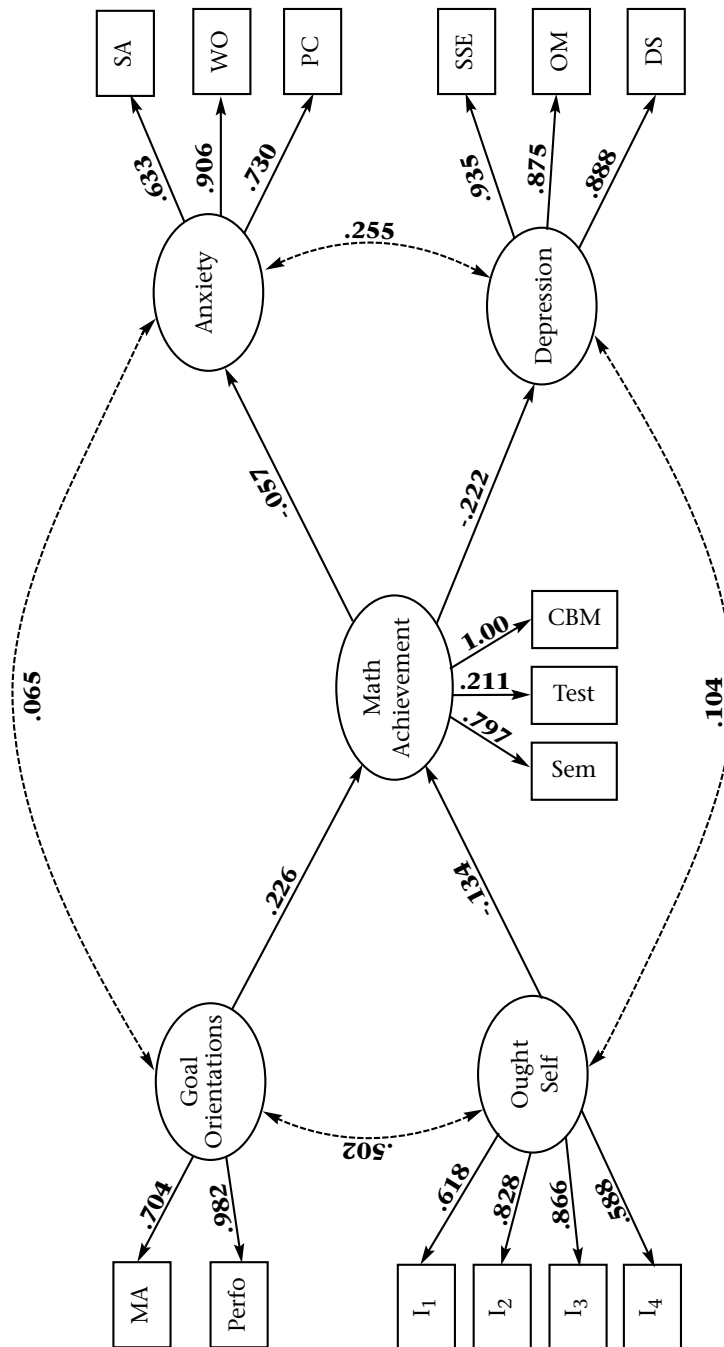
With regard to affect, a few significant differences emerged, none of which related to the ought-self group. Students who were amotivated displayed significantly less positive affect prior to the task [$F(3, 128) = 4.068, p < .01$]. No other differences in positive or negative affect emerged across motivation groups, suggesting that the ought-self group did not experience more negative affect than the other student groups. Given that mean differences in affect were influenced by the overall low level of achievement, it is likely that this lack of significant differences is attributable to no differences in achievement. However, the functionality of the ought-self was expected to emerge when modeling the slopes linking the ought-self to achievement and anxiety outcomes (see below).

Full Latent Variable Model Examining Antecedents and Consequences of Low Achievement

A latent variable path model was estimated to assess all relationships simultaneously (for the LD group, see Figure 1). This model postulated that a latent approach goal orientation construct (defined by mastery and performance-approach orientations) influences one’s achievement and post-achievement processes (i.e., the presence of anxiety and depression) both directly and indirectly. This is why goal orientations were called “mid-range constructs that occupy the conceptual space between ... specific ... and more general goals” (Pintrich et al., 2003, p. 3). That is, structural paths linked the ought-self to achievement and post-achievement outcomes. Both antecedent processes (goal orientations and the ought-self) were linked with each other with a bidirectional (covariation) arrow. Technically speaking, all factors were standardized in order to be able to assign a meaningful unit of measurement to each construct (Raykov & Marcoulides, 2000; Schumacker & Lomax, 1996).

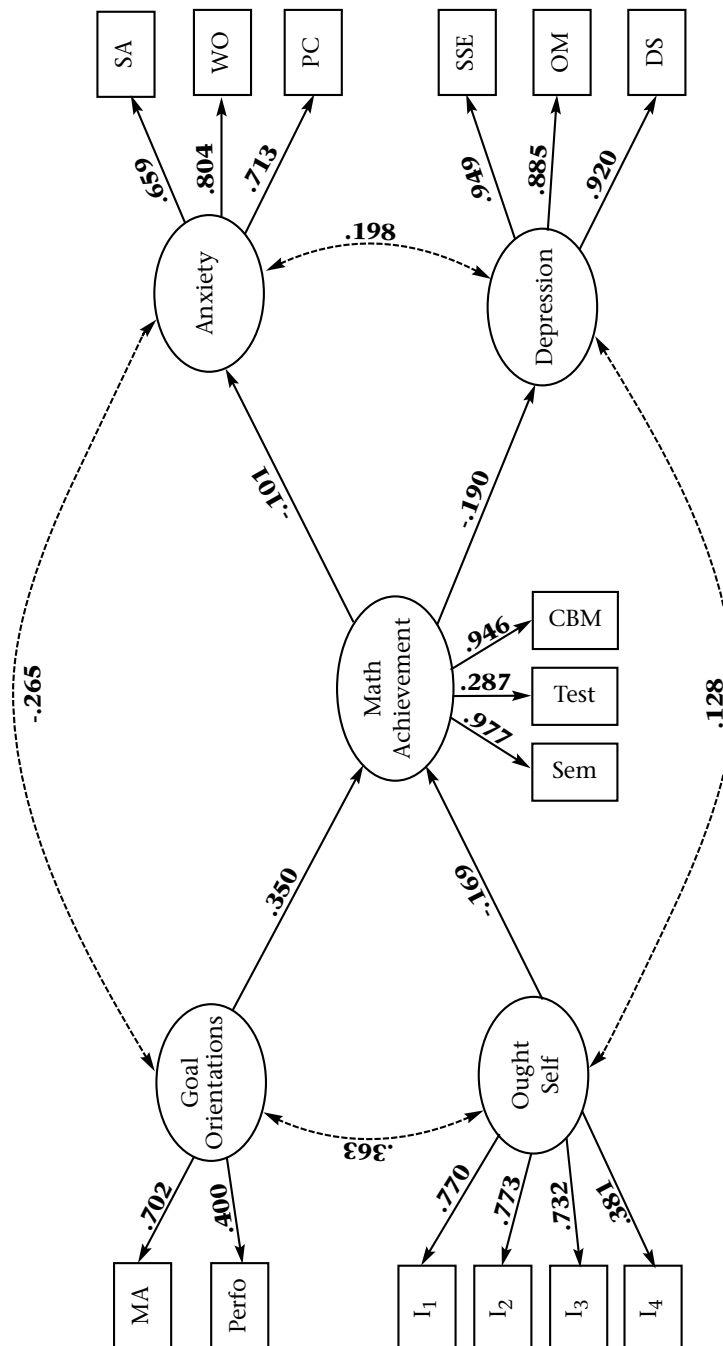
Using the LD sample, results indicated that the model fit the data well [$\chi^2(80, N = 117) = 104.821, p = .033$, CFI = .969, SRMR = .058]. All measurement paths were statistically significant at $p < .05$, and the chi-square statistic did not reach significance, suggesting no differences between the covariance matrix implied by the model and the one estimated from the data. As shown in Figure 1, the linear combination of approach-goal orientations was positively linked to academic achievement. The respective antecedent term reflecting obligations was linked negatively to achievement and positively, albeit weakly, to depression. Interesting, both antecedent motives correlated significantly, suggesting that approach goal orientations may contain

Figure 1. Structural linear model predicting math achievement from goal orientations (mastery and performance-approach) and the ought-self for students with LD ($n = 117$). Values in the model are standardized structural coefficients. The residual terms of the indicators as well as the variances of the latent variables are not shown for simplicity. One-way arrows indicate direct causal influences, and two-way arrows indicate between construct correlations.



¹ MA = Mastery approach goals; Perfo = Performance approach goals; 11-14 = Items 1 through 4 of the Ought-Self scale; Sem = Semester grades; Test = Performance on 15 math problems; CBM = Curriculum-based measure in math; SA = Social alienation; WO = Worry – Oversensitivity; PC = Physiological concerns; SSE = Social self-esteem; Om = Oppositional – Misbehavior; DS = Dysphoria – Sadness.

Figure 2. Structural linear model predicting math achievement from goal orientations (mastery and performance-approach) and the ought-self for typical students ($n = 538$). Values in the model are standardized structural coefficients. For simplicity purposes, residuals, variances, and disturbance terms were omitted from the figure. Full, one-way arrows indicate direct causal influences. Bidirectional, dotted arrows indicate covariations between constructs (standardized).



¹ MA = Mastery approach goals; Perfo = Performance approach goals; 11-14 = Items 1 through 4 of the Ought-Self scale; Sem = Semester grades; Test = Performance on 15 math problems; CBM = Curriculum-based measure in math; SA = Social alienation; WO = Worry – Oversensitivity; PC = Physiological concerns; SSE = Social self-esteem; Om = Oppositional – Misbehavior; DS = Dysphoria – Sadness.

elements of obligations. Alternatively, the ought-self may also reflect some kind of approach motivational means. On the right-hand side of the model, anxiety and depression scores seem to covary as a function of level of achievement.

Using the comparison sample of typical students ($n = 581$), results replicated those of the LD student sample with minor deviations. Those deviations involved the magnitude of the loadings (see Figure 2), none of which differed significantly (see section on model invariance below). In particular, goal orientations had a stronger direct link to achievement and a stronger negative covariation with anxiety. All other results were approximately the same. Thus, the data on the typical student group fit the hypothesized structural model well [$\chi^2(80, N = 581) = 365.740, p < .001, CFI = .934, SRMR = .062$] (see Figure 2).

Model Invariance Across Age Groups

Invariance of slopes. A more formal analysis was undertaken to evaluate model invariance across the two ability groups. If all structural paths were invariant, one would conclude that the hypothesized structural model fit the data from both samples equally well. In other words, the relationships hypothesized in the structural model were the same across the two groups.

One strategy for evaluating differences between corresponding parameters is to constrain one parameter at a time to be equal across groups and then evaluate parameter equivalence using chi-square difference tests. If the erosion in fit is substantial, inequality may be inferred (Mueller & Hancock, 2004). Using this approach, results indicated that no structural path was significantly different across the two groups. The estimates of the omnibus chi-square test were $\chi^2(164) = 471.775, p < .001, CFI = .940, SRMR = .061$. However, this does not mean that typical and LD student groups did not differ at the mean level. This analysis is described below.

Invariance of intercepts (means). To test the hypothesis that the intercepts of the latent variables were invariant, a multi-group latent mean model was run. Simply stated, the fourth research hypothesis examined whether typical and LD students differ on goal orientation, "oughts," math achievement, anxiety, and depression, at the latent variable level. Group membership was specified as a dummy vector (0 = LD, 1 = Typical).

Results indicated that there were significant between-group differences in goal orientations, math achievement, anxiety and depression (see Figure 3). Students with LD obtained lower scores on approach goals (mastery and performance) and in math, and demonstrated heightened anxiety and heightened depression. Model fit was once again acceptable given typical conventions [$\chi^2(100, N = 702) = 595.626, p < .001, CFI =$

.914, SRMR = .096] (Jaccard & Wan, 1996). Using standardized effect size indicators (i.e., to estimate how far apart the groups are in the constructs of interest), typical students were .70 *SD* units higher on goal orientation, .18 *SD* units higher on "oughts," 2.27 *SD* units higher on math, -.36 *SD* units lower in anxiety, and -.30 *SD* units lower in depression. These findings corroborate with the idea that the LD population suffers from multiple disadvantages that have multiple origins (Greenway & Milne, 1999; Manassis & Young, 2000; Poskiparta, Niemi, Lepola, Ahtola, & Laine, 2003; Yasutake & Bryan, 1995).

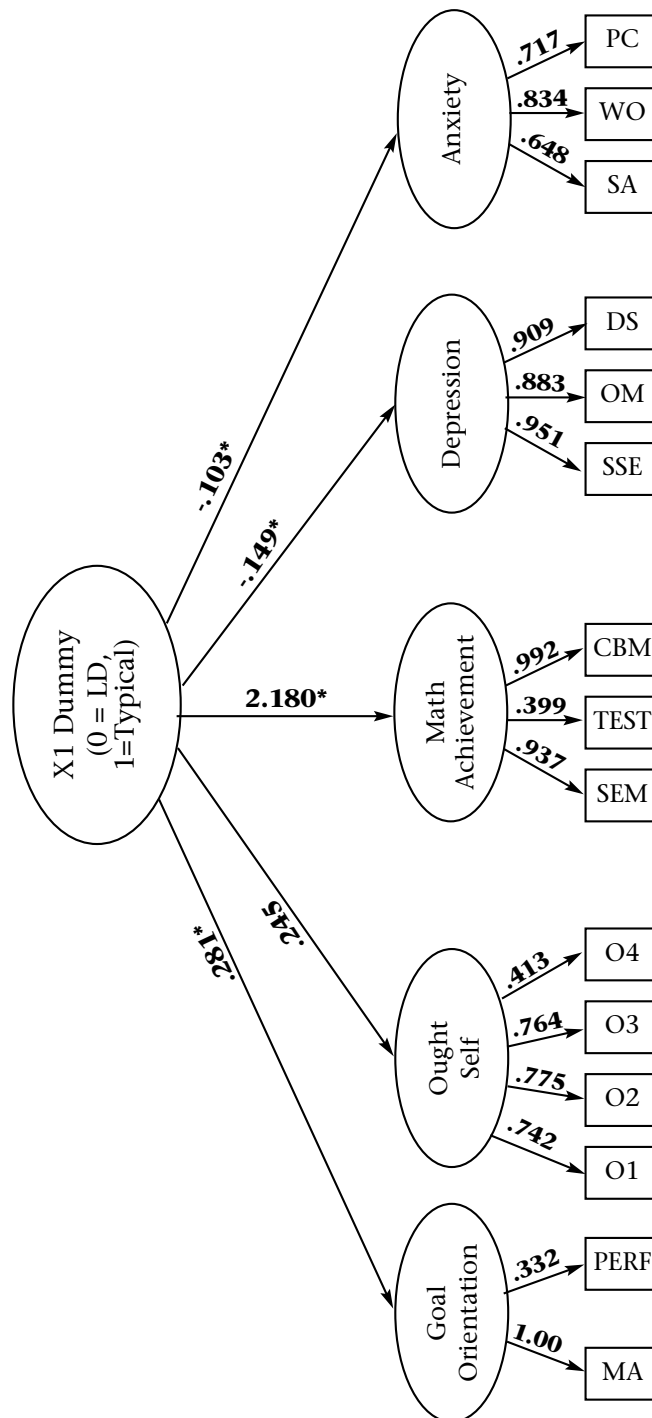
DISCUSSION

The present study evaluated the self-regulatory properties of "oughts" as they relate to academic achievement and post-achievement processes. Using a sample of students with LD and a large sample of typical students, a number of findings emerged.

First, "oughts" appear to have a strong basis in avoidance motivation. Although the results from the first hypothesis were based on correlations, those correlations were strong and in the predicted direction. Feeling obliged to engage in an activity and to do well was strongly associated with fear; fear of failure and fear of negative evaluations. Thus, the most obvious implication of that motivational construct is its association with avoidance motivation, which was the essence of Hypothesis 2. Students who were motivated by strong "oughts" persisted significantly less compared to all other students with LD, who were motivated by other types of motivational forces. Although the significantly more time that students motivated by approach goals spent on the task was not equally beneficial, the results confirmed the avoidance dimension of the ought-self. Obviously, within the population of students with LD, there are motivational subtypes (e.g., those motivated by "oughts") that are associated with inferior outcomes (e.g., task persistence).

With regard to the regulation of various goal orientations, results favored the multiple-goal perspective (e.g., Pintrich, 2000; Sideridis, 2005c). The multiplicative mastery by performance-approach term was associated with the most extended effort. Students who pursued multiple goals persisted 37% longer than those motivated by "oughts." This finding supports the interactive goal hypothesis: Students motivated by multiple goals have an advantage over pursuing either mastery or performance approach goals (Barron & Harackiewicz, 2001, 2003; Pintrich et al., 2003). Following the multiple-goal term, focusing on mastery was the most adaptive orientation, a finding that is consistent with typical student groups (e.g., Elliot, McGregor, & Gable, 1999). Thus, for students with LD, being motivated by approach goals

Figure 3. Latent variable means model comparing students with and without LD across all latent variables. The paths linking the dummy vector to the latent variables are unstandardized. The (*) indicates paths that are significant at $p < .05$.



¹ MA = Mastery approach goals; Perfo = Performance approach goals; 11-14 = Items 1 through 4 of the Ought-Self scale; Sem = Semester grades; Test = Performance on 15 math problems; CBM = Curriculum-based measure in math; SA = Social alienation; WO = Worry – Oversensitivity; PC = Physiological concerns; SSE = Social self-esteem; Om = Oppositional – Misbehavior; DS = Dysphoria – Sadness.

(e.g., to get good grades or learn to master a task) is an adaptive orientation.

A third important finding comes from modeling all construct relationships simultaneously. By cross-validating the conceptual model with two samples, results confirmed the negative role of “oughts.” Obligations were consistently associated with poor achievement outcomes and were positive predictors of psychopathology. Thus, “oughts” appear to forestall rather than facilitate goal setting and goal attainment. The obtained relationships support the theoretical theses of self-determination theory (Deci & Ryan, 2000) that external coercions reflect motivation that is not authentic (but other-authored) and is associated with decreased interest, excitement, confidence, and persistence (Deci & Ryan, 1991).

The present study also extends our knowledge about the regulation of goal orientations. Approach goals (mastery and performance) were associated with enhanced persistence; decreased effort was associated with avoidance motivation. The latent approach goal orientation construct confirmed the earlier findings (Hypothesis 2) with regard to the adaptiveness of multiple goals. The latent goal orientation linear term reflected individuals who were motivated by both mastery-approach and performance-approach goals. This term was highly adaptive for both student groups. The adaptiveness of multiple goals over single goals has not always been supported. For example, Meece and Holt (1993) and Sideridis and Tsorbatzoudis (2003) demonstrated that mastery goals were more adaptive compared to the pursuit of multiple goals.

Regarding the motivational role of “oughts” in the achievement continuum, the ought-self can interact with goal orientations in affecting achievement and post-achievement outcomes (Sideridis, in press-b). This interaction was modeled with a bidirectional arrow linking obligations to goal orientations. Thus, “oughts” may act concurrently with goal orientations. For example, a student may feel obliged to outperform his fellow students when he receives such messages from parents, teachers, or other sources of influence. In such cases students are adopting performance goals, but at the same time, the ought element is also operative. From the bivariate correlations it was obvious that goal orientations included some notion of obligations as both constructs were significantly correlated. This interplay of “oughts” and goal orientations could be the subject of future investigations. For example, we don’t know how “oughts” and goal orientations operate with regard to short- or long-term goals. Of interest is also how goals are regulated when other motives are operative, which may produce high reinforcement value.

This study also highlights an underexplored aspect

of learning disabilities – that children with LD may exhibit comorbid characteristics as well. Mean comparisons between children with and without LD indicated that the former were inferior in motivation and achievement and obtained significantly higher scores on anxiety and depression. This finding agrees with those of previous studies (e.g., Heath & Ross, 2000; Heath & Weiner, 1996; Sideridis, in press-a), but also suggests that learning disabilities is a complex disorder that entails deficits in multiple areas, including motivational, emotional, and psychopathological (e.g., Goldstein, Paul, & San-Filippo, 1985; Gregg, Hoy, King, Moreland, & Jagota, 1992; Grolnick & Ryan, 1990; Sideridis, 2002). Thus, interventions should be targeted at creating environments that empower students, through enhancing their motivation and positive affect, in order to achieve positive academic outcomes. How goal structures can enhance student motivation and achievement is described below.

Implications for Practice

In summary, feeling obliged to engage in an academic activity represents a maladaptive form of regulation that is manifested in a lack of persistence, low achievement, and a significant dose of negative affect. Thus, it is strongly recommended that teachers do not emphasize obligations as a motive for learning. The findings can also be explained with the pleasure and pain principle described in the beginning of the century (see Freud, 1950). Approaching a task out of obligation is not associated with approaching pleasure but rather avoiding pain. Consequently, the motive to do well out of obligations (self- or other-imposed) will, most likely, result in goal failure. Additionally, engagement out of obligations is highly unlikely to produce positive affect, unless performance is high; then positive affect may be the outcome of that performance.

A current area of research involves creating classroom environments that are conducive to learning (Kaplan, Gheen, & Midgley, 2002; Sideridis, 2005d; Urdan & Midgley, 2003). Recent studies in goal theory suggest that teachers create classrooms that reflect their motivational views. From the present study’s findings, it is apparent that the creation of classroom environments that promote approach goals most likely accelerates student achievement. Attempts to transmit a sense of obligation for engaging in academic activities is most likely associated with self-regulation failure and enhanced negative affect.

What then are the elements of classroom environments that are conducive to learning and achievement? Several researchers have suggested classroom structures that may act as accelerators of student achievement (Maher & Anderman, 1993; Urdan &

Midgley, 2003). For example, researchers who were in favor of creating mastery-oriented environments (Maher & Anderman, 1993) proposed an emphasis on help-seeking, reinforcement for effort, positive feedback, autonomy, focus on learning/understanding/mastering the material, cooperation, and employing interesting, although challenging, activities. Such classrooms seem to be associated with adaptive learning and positive affect (Urduan & Midgley, 2003) as well as low incidences of disruptive behavior (e.g., Kaplan et al., 2002).

On the contrary, classroom goal structures that emphasize performance goals are generally not considered adaptive for learning purposes. The emphasis in these classrooms is on performing well, being competitive, making as few mistakes as possible, constantly considering and evaluating performance using normative standards, and having a general "performance" focus.

Research examining how those structures affect student behavior has indicated that classrooms with an emphasis on performance goals were associated with disruptive behaviors (Kaplan et al., 2002), self-handicapping (Urduan, 2004), avoidance behaviors/engagement (Turner et al., 2002), low help-seeking (Karabenick, 2004), and negative affect (Urduan & Midgley, 2003). Thus, recent evidence does not support the creation of classroom contexts that emphasize performance goals. Mastery classroom structures, however, have been consistently reported to be adaptive for both student motivation and achievement.

Future research could evaluate the interaction of motives based on obligations with other approach or avoidance motives. According to the multiple-goal perspective, a student might like mathematics but at the same time feel obliged to get good grades in math because her parents wish it. Understanding the interaction of conflicting motives (i.e., approach and avoidance) may help educators unravel one piece of the puzzle (i.e., the complex relationship between motives and behavior). Furthermore, developing educational interventions that boost both cognition and motivation may be the most intriguing and challenging line of research (Lepola, Salonen, Vauras, & Poskiparta, 2004; Vauras, Rauhanummi, Kinnunen, & Lepola, 1999).

REFERENCES

- Ajzen, I. (1988). *Attitudes, personality, and behavior*. Bristol, UK: Open University Press.
- Ames, C. (1992). Classrooms: Goals, structures and student motivation. *Journal of Educational Psychology*, 84, 261-271.
- Barron, K. E., & Harackiewicz, J. M. (2001). Achievement goals and optimal motivation: Testing multiple goal models. *Journal of Personality and Social Psychology*, 80, 706-722.
- Barron, K., & Harackiewicz, J. M. (2003). Revisiting the benefits of performance-approach goals in the college classroom: Exploring the role of goals in advanced college courses. *International Journal of Educational Research*, 35, 357-374.
- Bentler, P. M. (1998). *EQS structural equations program manual*. Los Angeles, CA: BMDP Statistical Software Inc.
- Botsas, G., & Padelidu, S. (2003). Goal orientation and reading comprehension strategy use among students with and without reading difficulties. *International Journal of Educational Research*, 39, 477-495.
- Bouffard, T., & Couture, N. (2003). Motivational profile and academic achievement among students enrolled in different schooling tracks. *Educational Studies*, 29, 19-38.
- Bryan, T., Burstein, K., & Ergul, C. (2004). The social-emotional side of learning disabilities: A science based presentation of the state of the art. *Learning Disability Quarterly*, 27, 45-52.
- Carlson, C. L., Booth, J. E., Shin, M., & Canu, W. H. (2002). Parent-, teacher-, and self-rated motivational styles in ADHD subtypes. *Journal of Learning Disabilities*, 35, 104-113.
- Clifford, M. M. (1988). Failure tolerance and academic risk-taking in ten to twelve-year old students. *British Journal of Educational Psychology*, 58, 15-27.
- Cole, D. A., Hoffman, K., Tram, J. M., & Maxwell, S. E. (2000). Structural differences in parent and child reports of children's symptoms of depression and anxiety. *Psychological Assessment*, 12, 174-185.
- Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227-268.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska symposium on motivation* (vol. 38, pp. 237-288). Lincoln: University of Nebraska Press.
- Dunn, P. B., & Shapiro, S. K. (1999). Gender differences in the achievement goal orientations of ADHD children. *Cognitive Therapy and Research*, 23, 327-344.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, 41, 1040-1048.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256-273.
- Dykman, B. M. (1998). Integrating cognitive and motivational factors in depression: Initial tests of a goal-orientation approach. *Journal of Personality and Social Psychology*, 74, 139-158.
- Elias, M. J. (2004). The connection between social-emotional learning and learning disabilities: Implications for intervention. *Learning Disability Quarterly*, 27, 53-63.
- Elksnin, L. K., & Elksnin, N. (2004). The social-emotional side of learning disabilities. *Learning Disability Quarterly*, 27, 3-8.
- Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, 72, 218-232.
- Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology*, 70, 461-475.
- Elliot, A. J., McGregor, J. A., & Gable, S. (1999). Achievement goals, study strategies, and exam performance: A mediational analysis. *Journal of Educational Psychology*, 91, 549-563.
- Freud, S. (1950). *Beyond the pleasure principle*. New York: Liveright.
- Garcia, J. N., & de Caso, A. M. (2004). Effects of a motivational intervention for improving the writing of children with learning disabilities. *Learning Disability Quarterly*, 27, 141-159.
- Goldstein, D., Paul, G. G., & Sanfilippo-Cohn, S. (1985). Depression and achievement in subgroups of children with learning disabilities. *Journal of Applied Developmental Psychology*, 6, 263-275.

- Greenway, P., & Milne, L. (1999). Relationship between psychopathology, learning disabilities, or both and WISC-III subtest scatter in adolescents. *Psychology in the Schools*, 36, 103-108.
- Gregg, N., Hoy, C., King, M., Moreland, C., & Jagota, M. (1992). The MMPI-2 profile of adults with learning disabilities in university and rehabilitation settings. *Journal of Learning Disabilities*, 25, 386-395.
- Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, 52, 890-898.
- Grolnick, W. S., & Ryan, R. M. (1990). Self-perceptions, motivation, and adjustment in children with learning disabilities: A multiple group comparison study. *Journal of Learning Disabilities*, 23, 177-184.
- Harackiewicz, J. M., Barron, K. E., Pintrich, P. R., Elliot, A. J., & Thrash, T. M. (2002). Revision of achievement goal theory: Necessary and illuminating. *Journal of Educational Psychology*, 94, 638-645.
- Heath, N. L., & Ross, S. (2000). Prevalence and expression of depressive symptomatology in students with and without learning disabilities. *Learning Disability Quarterly*, 23, 24-36.
- Heath, N. L., & Wiener, J. (1996). Depression and nonacademic self-perceptions in children with and without learning disabilities. *Learning Disability Quarterly*, 19, 34-44.
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94, 319-340.
- Hoy, C., Gregg, N., Wisenbaker, J., Manglitz, E., King, M., & Moreland, C. (1997). Depression and anxiety in two groups of adults with learning disabilities. *Learning Disability Quarterly*, 20, 280-291.
- Hu, L. T., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues and applications* (pp. 76-99). Thousand Oaks, CA: Sage.
- Hu, L. T., & Bentler, P. M. (1998a). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, 3, 424-453.
- Hu, L. T., & Bentler, P. M. (1998b). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 55-72.
- Jaccard, J., & Wan, C. K. (1992). *LISREL approaches to interaction effects in multiple regression*. Thousand Oaks, CA: Sage.
- Kaplan, A., Gheen, M., & Midgley, C. (2002). Classroom goal structure and student disruptive behavior. *British Journal of Educational Psychology*, 72, 191-211.
- Kaplan, A., & Middleton, M. (2002). Should childhood be a journey or a race? *Journal of Educational Psychology*, 94, 646-648.
- Karabenick, S. A. (2004). Perceived achievement goal structure and college student help seeking. *Journal of Educational Psychology*, 96, 569-581.
- Kavale, K. A., & Forness, S. R. (1987). The far side of heterogeneity: A critical analysis of empirical subtyping research in learning disabilities. *Journal of Learning Disabilities*, 20, 374-382.
- Kovacs, M. (1992). *Children's depression inventory (CDI) manual*. North Tonawanda, NY: Multi-Health Systems.
- Laurent, J., Catanzaro, S. J., Joiner, T. E., Rudolph, K. D., Potter, K. I., Lambert, S., Osborne, L., & Gathright, T. (1999). A measure of positive and negative affect for children: Scale development and preliminary validation. *Psychological Assessment*, 11, 326-338.
- Lepola, J., Salonen, P., Vauras, M., & Poskiparta, E. (2004). Understanding the development of subnormal performance in children from a motivational-interactionist perspective. *International Review of Research in Mental Retardation*, 28, 145-189.
- Lethwaite, R., & Piparo, A. J. (1993). Goal orientations in young competitive athletes: Physical achievement, social-relational, and experiential concerns. *Journal of Research in Personality*, 27, 103-117.
- Maier, M., & Anderman, E. (1993). Reinventing schools for early adolescents: Emphasizing task goals. *The Elementary School Journal*, 93, 593-610.
- Manassis, K., & Young, A. (2000). Perceptions of emotions in anxious and learning disabled children. *Depression & Anxiety*, 12, 209-216.
- Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist*, 41, 954-969.
- Masi, G., Provedani, P., Poli, P. (1998). School failure in early adolescence: The psychopathological risk. *Child Psychiatry & Human Development*, 29, 127-140.
- Meece, J. L., & Holt, K. (1993). A pattern analysis of students' achievement goals. *Journal of Educational Psychology*, 85, 582-590.
- Midgley, C., Kaplan, A., & Middleton, M. (2001). Performance-approach goals: Good for what, for whom, under what circumstances, and at what cost? *Journal of Educational Psychology*, 93, 77-86.
- Midgley, C., Maehr, M. L., Huda, L. A., Anderman, E., Anderman, L., & Gheen, M. (2000). *Manual for the Patterns of Adaptive Learning Scale*. Ann Arbor: University of Michigan.
- Mueller, R. O., & Hancock, G. R. (2004). *Structural equation modeling*. Workshop presented at the American Educational Research Association, April 11-12, San Diego, CA.
- Nicholls, J. G., Patashnick, M., & Nolen, S. B. (1985). Adolescents' theories of education. *Journal of Educational Psychology*, 77, 683-692.
- Onwuegbuzie, A., Levin, J. R., & Leach, N. L. (2003). Do effect sizes measure up? A brief assessment. *Learning Disabilities: A Contemporary Journal*, 1, 37-40.
- Paget, K. D., & Reynolds, C. R. (1984). Dimensions, levels and reliabilities on the revised Children's Manifest Anxiety Scale with learning disabled children. *Journal of Learning Disabilities*, 17, 137-141.
- Pintrich, P. R. (2000). Multiple goals, multiple pathways: The role of goal orientation in learning and achievement. *Journal of Educational Psychology*, 92, 554-555.
- Pintrich, P. R., Anderman, E. M., & Klobucar, C. (1994). Intraindividual differences in motivation and cognition in students with and without learning disabilities. *Journal of Learning Disabilities*, 27, 360-370.
- Pintrich, P. R., Conley, A. M., & Kempler, T. P. (2003). Current issues in achievement goal theory and research. *International Journal of Educational Research*, 39, 319-337.
- Poskiparta, E., Niemi, P., Lepola, J., Ahtola, A., & Laine, P. (2003). Motivational-emotional vulnerability and difficulties in learning to read and spell. *British Journal of Educational Psychology*, 73, 187-206.
- Raykov, T., & Marcoulides, G. A. (2000). *A first course in structural equation modeling*. Mahwah, NJ: Lawrence Erlbaum Publishers.
- Reynolds, C. R., & Richmond, B. O. (1978). What I think and feel: A revised measure of children's manifest anxiety. *Journal of Abnormal Child Psychology*, 6, 271-280.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68-78.
- Schumacker, R. E., & Lomax, R. G. (1996). *A beginner's guide to structural equation modeling*. Mahwah, NJ: Lawrence Erlbaum Publishers.
- Sideridis, G. D. (1999). On establishing nonsignificance. *Dyslexia*, 5, 47-52.

- Sideridis, G. D. (2002). Goal importance and students at risk of having language difficulties: An underexplored aspect of student motivation. *Journal of Learning Disabilities, 35*, 343-356.
- Sideridis, G. D. (2003a). On the origins of helpless behavior in students with learning disabilities: Avoidance motivation? *International Journal of Educational Research, 39*, 497-517.
- Sideridis, G. D. (2003b, August). *On the psychometric properties of ought orientation*. Poster presented at the 4th Panhellenic Psychological Conference, Rhodes, Greece.
- Sideridis, G. D. (2005a). Attitudes and motivation of poor and good spellers: Broadening planned behavior theory. *Reading and Writing Quarterly, 21*, 87-103.
- Sideridis, G. D. (2005b). Performance approach-avoidance motivation and planned behavior theory: Model stability with Greek students with and without learning disabilities. *Reading and Writing Quarterly, 21*, 331-359.
- Sideridis, G. D. (2005c). Goal orientations, academic achievement and depression. Evidence in favor of revised goal theory. *Journal of Educational Psychology, 97*, 366-375.
- Sideridis, G. D. (2005d). Goal orientation, classroom goal structures, academic achievement, and regulation in learning disabilities. In G. D. Sideridis & T. A. Citro (Eds.), *Research to practice: Effective interventions in learning disabilities* (pp. 193-219). Boston: Learning Disabilities Worldwide.
- Sideridis, G. D. (in press-a). Understanding low achievement and depression in the LD: A goal orientation approach. In H. Switzky (Ed.), *Current perspectives on individual differences in personality and motivation in persons with mental retardation and other developmental disabilities. International review of research in mental retardation*. San Diego: Academic Press.
- Sideridis, G. D. (in press-b). Goal orientations and strong oughts: Adaptive or maladaptive forms of motivation for students with and without suspected learning disabilities? *Learning and Individual Differences*.
- Sideridis, G. D., Morgan, P., Botsas, G., Padeliadu, S., & Fuchs, D. (in press). Predicting learning disabilities based on motivation, metacognition, and psychopathology. *Journal of Learning Disabilities*.
- Sideridis, G. D., & Tsorbatzoudis, Ch. (2003). Intra-group motivational analysis of students with learning disabilities: A goal orientation approach. *Learning Disabilities: A Contemporary Journal, 1*, 8-19.
- Thorkildsen, T. A., & Nicholls, J. G. (1998). Fifth graders' achievement orientations and beliefs: Individual and classroom differences. *Journal of Educational Psychology, 90*, 179-201.
- Turner, J. C., Meyer, D. K., & Schweinle, A. (2003). The importance of emotion in theories of motivation: Empirical, methodological, and theoretical considerations from a goal theory perspective. *International Journal of Educational Research, 39*, 375-393.
- Turner, J. C., Midgley, C., Meyer, D. K., Gheen, M., Anderman, E., Kang, Y., & Patrick, H. (2002). The classroom environment and students' reports of avoidance strategies in mathematics: A multimethod study. *Journal of Educational Psychology, 94*, 88-106.
- Urdu, T. (2004). Predictors of academic self-handicapping and achievement: Examining achievement goals, classroom goal structures, and culture. *Journal of Educational Psychology, 96*, 251-264.
- Urdu, T., & Midgley, C. (2003). Changes in the perceived classroom goal structure and pattern of adaptive learning during early adolescence. *Contemporary Educational Psychology, 28*, 524-551.
- Vaughn, S., & Fuchs, L. S. (2003). Redefining learning disabilities as inadequate response to instruction: The promise and potential pitfalls. *Learning Disabilities: Research and Practice, 18*, 137-146.
- Vauras, M., Rauhanummi, T., Kinnunen, R., & Lepola, J. (1999). Motivational vulnerability as a challenge for educational interventions. *International Journal of Educational Research, 31*, 515-531.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect. The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.
- Wentzel, K. R. (1989). Adolescent classroom goals, standards for performance and academic achievement: An interactionist perspective. *Journal of Educational Psychology, 81*, 131-142.
- Yasutake, D., & Bryan, T. (1995). The influence of affect on the achievement and behavior of students with learning disabilities. *Journal of Learning Disabilities, 28*, 329-334.

FOOTNOTES

¹The formula for the estimation of standardized effect sizes came from Mueller and Hancock (2004) through applying the classical linear regression formula, $Y^1 = a + bX1 + e$, with $X1$ being the dummy vector. Thus, the estimate of the effect size statistic (d) was:

$d = \frac{\beta}{\sqrt{Var(e)}}$, where β is the "raw" slope and $Var(e)$ is the disturbance of the latent variable Y .

²Elliot and McGregor (2001) and Pintrich (2000) suggested the existence of mastery-avoidance goals. Those goals are based on the notion that individuals may approach a task with the fear of not being able to master the material. Thus, the task is interesting to the individual but he/she focuses on the negative consequences from not understanding the material of interest. It appears that feelings of worry most likely reflect the behavioral manifestations of that motivational construct. Its existence is still debated.

Requests for reprints should be addressed to: Georgios D. Sideridis, Department of Psychology, University of Crete, Rethimnon, 74100, Crete; sideridis@psy.soc.uoc.gr